WFP-0301

MACHINE FOR THE TREATMENT OF A TRACK

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the priority of Austrian utility model application GM 38/2003, filed January 29, 2003, the subject matter of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] Field of the Invention

[0003] The present invention relates, in general, to a machine for the treatment of a track.

[0004] U.S. Patent No. 4,979,247 describes a machine of the generic type, configured as a railroad track renewal train. In a rear section of that machine, a bridge-like girder equipped with working tools is arranged which is displaceable relative to the machine frame in a longitudinal direction of the track. Auxiliary undercarriages are provided at either end of the bridge girder, thus allowing the girder to be moved in the longitudinal direction from a working position into a position on the machine frame for transit travel of the machine.

SUMMARY OF THE INVENTION

[0005] It is accordingly an object of the invention to provide a machine for treating a track which overcomes the above-mentioned disadvantages of the

heretofore-known devices and methods of this general type and which allows treating short track sections while also including the possibility of renewing rails, if desired.

[0006] With the foregoing and other objects in view there is provided, in accordance with the invention, a machine for treating a track extending in a longitudinal direction, the machine comprising:

a first machine frame having undercarriages for mobility on the track, a second machine frame having undercarriages for mobility on the track, a motive drive operatively associated with one of the first and second machine frames for driving along the track; and a coupling for detachably connecting the first and second machine frames to one another;

a bridge girder extending in the longitudinal direction and including a lifting device, the bridge girder having a first end rotatably connected to the first machine frame about a substantially vertical axis and a second end supportable on the second machine frame and displaceable relative thereto; and

a guide device for displacing the second end on the second machine frame along the longitudinal direction.

[0007] In other words, the foregoing and other objects of the invention are achieved with a machine that comprises a first machine frame having undercarriages and a motive drive for mobility on the track; a second machine frame having undercarriages for mobility on the track; and a coupling for

detachably connecting the first machine frame to the second machine frame. A bridge girder is provided, extending in the longitudinal direction and having a first end and a second end and comprising lifting devices, wherein the first end is connected to the first machine frame for rotation about a vertical axis, while the second end is supportable on the second machine frame and displaceable relative thereto in the longitudinal direction. Guide means are provided for displacing the second end on the second machine frame.

[0008] A solution of this kind offers the advantage that, as a result of the bridge girder being displaceable on the second machine frame, it is now possible, on the one hand, to employ the second machine frame for transporting rails while, on the other hand, rails can be moved to and from the track without hindrance with the aid of the bridge girder. Subsequent to the renewal or exchange of the rails, there is the added possibility of carrying out a correction of the track position in the newly treated track section, thus finalizing the track treatment, with the aid of working units which may be located on the first machine frame.

[0009] In accordance with an added feature of the invention, the guide device comprises flanged rollers spaced apart from one another transversely to the longitudinal direction, and the second machine frame includes guide rails for rollingly supporting the flanged rollers.

[0010] In accordance with an additional feature of the invention, an auxiliary undercarriage is connected to the bridge girder in a region immediately adjoining

the second end. Preferably, the auxiliary undercarriage is pivotally mounted to the bridge girder about an axis extending perpendicularly to the longitudinal direction, and drivably connected to a pivot drive. The auxiliary undercarriage may be vertically adjustable relative to the axis.

[0011] In accordance with another feature of the invention, a work cabin is associated with the bridge girder. Preferably, the work cabin is disposed at the second end of the bridge girder and mounted for vertical adjustment relative to the bridge girder, and which further comprises a drive for vertically adjusting the work cabin.

[0012] In accordance with a concomitant feature of the invention, the bridge girder is configured to be telescopically extendable in the longitudinal direction.

[0013] Other features which are considered as characteristic for the invention are set forth in the appended claims.

[0014] Although the invention is illustrated and described herein as embodied in a machine for the treatment of a track, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

[0015] The construction and method of operation of the invention, however, together with additional objects and advantages thereof will be best understood

from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

[0016] Figs. 1 - 4 are side views of the machine according to the invention, in respectively different working positions; and

[0017] FIG. 5 is a diagrammatic side view of a bridge girder of telescopic design.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] Turning now to the drawing, and in particular to Fig. 1, there is shown, in side view, a machine 1 which is configured for the treatment of a track 8 extending in a longitudinal direction and comprising rails 6 and sleepers 7. The machine 1 is composed of a first machine frame 2 and a second machine frame 4, detachably connected to one another by a coupling 3. Both machine frames 2,4 are mobile on the track 8 by means of undercarriages 5. The first machine frame 2 is additionally equipped with a motive drive 9, a work cabin 10, and working units 11 for treating the track 8.

[0019] The second machine frame 4 comprises a loading area 12 to which two guide rails 13 are connected, extending in the longitudinal direction and spaced from one another transversely of the longitudinal direction. Above the two machine frames 2 and 4, a bridge girder 14 is provided which also extends in the longitudinal direction and has a first end 15 and a second end 17. The first

end 15 is mounted on the first machine frame 2 for rotation about a vertical axis 16. The opposite, second end 17 of the bridge girder 14 is connected to, or supported on, guide means or a guide device 18. The guide device 18 includes flanged rollers 19 spaced from one another transversely of the longitudinal direction. The flanged rollers 19 are configured for rolling on the guide rails 13 of the second machine frame 4.

[0020] In a region immediately adjoining the second end 17, the bridge girder 14 is connected to an auxiliary undercarriage 20 (best visible in Fig. 3) which is mounted to the bridge girder 14 for pivoting about an axis 22 extending perpendicularly to the longitudinal direction. To that end, the auxiliary undercarriage 20 is connected to a pivot drive 21 and is vertically adjustable relative to the axis 22. Furthermore, a work cabin 23 is associated with the second end 17 of the bridge girder 14. The work cabin 23 comprises a control device 24 and is vertically adjustable relative to the bridge girder 14 by means of a drive 25. The bridge girder 14 is also equipped with a number of lifting devices 26, designed as trolleys, which are provided for gripping and lifting a rail segment 27 which may be transported on the loading area 12 of the second machine frame 4.

[0021] The mode of functioning of the machine 1 will now be described in more detail. At the beginning of working operations, the machine 1 (with the two machine frames 2 and 4 coupled to one another) is moved along the track 8 to a track section that is to be treated. After arriving at the work site, a rail segment 27 located on the loading area 12 is gripped with the aid of the lifting devices 26

and lifted up. Thereafter, the coupling 3 is detached, and the first machine frame 2 is moved away from the second machine frame 4 by actuation of the motive drive 9. This causes the guide means 18 to roll on the guide rails 13 until the coupling 3 at the end of the second machine frame 4 is reached (see Fig. 2). Thus, a renewal gap 28 of the track 8 is exposed in which the rail segment 27 can now be exchanged.

[0022] As can be seen in Fig. 3, the second end 17 of the bridge girder 14 may be supported on the track 8 by means of the auxiliary undercarriage 20 which has been pivoted downward with the aid of the pivot drive 21. Thus, the second machine frame 4 is freed and may now be driven away from the work site or the renewal gap 28 for transporting off old rail segments 27 or for bringing on new rail segments 27 to be installed in the track 8.

[0023] As soon as the second machine frame 4 has again returned to the renewal gap 28, the flanged rollers 19 of the guide means 18 are mounted on the guide rails 13, and the first machine frame 2 is reconnected to the second machine frame 4 with the aid of the coupling 3 (see Fig. 4). Thereafter, the exchanged old rail segment 27, suspended from the bridge girder 14, can be lowered and deposited on the loading area 12.

[0024] As a finalizing step in the treatment of the track 8, the track section which has now been provided with new rail segments 27 may be optimized with regard to the track position. This is carried out with the aid of the working units 11 provided on the first machine frame 2, having the shape of a tamping unit

and a track lifting unit. For transit travel of the machine 1 from the work site, the work cabin 23 is lowered by means of the drive 25.

[0025] Finally, as indicated in Fig. 5, the bridge girder 14 may also be configured for telescopic elongation in the longitudinal direction in order to thereby extend the renewal gap 28.

[0026] While the invention has been illustrated and described as embodied in a machine for the treatment of a track, it is not intended to be limited to the details shown since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.